REMARKS

The Official Action of November 8, 2005, and the prior art cited and relied upon therein have been carefully studied. The claims in the application are now claims 1, 3, 4, 12-14, 23 and 24, and these claims define patentable subject matter warranting their allowance. Favorable reconsideration and such allowance are respectfully urged.

Claims 2, 5-11, 17, 21 and 22 have been canceled, and new claims 23 and 24 added. Claims 1, 3, 4, 12-14, 23 and 24 remain in the application for consideration.

In response to the Examiner's objection to claims 15 and 22 and objection to claim 21 under 37 C.F.R. §1.75(c), Applicant has amended claim 15 as suggested by the Examiner and has canceled claims 21 and 22. Applicant respectfully submits that these objections have now been overcome.

Applicant thanks the Examiner for his indication that claims 12 and 13 would be allowable subject to being rewritten in independent form. In response, Applicant has added the features of independent claim 7 to both the allowable features of claims 12 and 13. Applicant respectfully submits that claims 12 and 13 are now allowable

along with claims 14, 23 and 24 dependent from both allowable claims 12 and 13.

The Examiner has further rejected claims 1-6, 15, 17 and 21-22 under 35 U.S.C. §102(b) as being anticipated by Thompson '088, claims 7-10 and 14 under 35 U.S.C. §103(a) as being unpatentable over Thompson in view of Ridd '794, and claim 11 under 35 U.S.C. §103(a) as being unpatentable over Thompson in view of Ridd, further in view of Bischoff '840. Applicant respectfully traverses all of these rejections as applied to the claims as amended.

Independent claim 1 has been amended such that it includes all limiting features of claims 2, 5 and 6. Furthermore, the wording has been amended such that the subject matter of claim 1 is limited to the main embodiment of the invention described in the detailed description and represented in the figure 1.

As such, claim 1 refers to neighboring voltage electrodes (i.e. electrodes represented in figure 1 by numbers 14 and 15, 15 and 18, 18 and 19, 19 and 20, respectively). These neighboring voltage electrodes form neighboring pairs of voltage electrodes that have one voltage electrode (15, 18, 19) in common.

In the present application,

- "a pair of voltage electrodes" always refers to two voltage electrodes used to measure a voltage gradient between both voltage electrodes,
- "neighboring voltage electrodes" always refers to two voltage electrodes that are located beside each other, i.e. not separated from one another by any other electrode in between them, and
- "a pair of neighboring voltage electrodes having a voltage electrode in common" always refers to three voltage electrodes whereby a common voltage electrode is located between two other voltage electrodes such that the common voltage electrode is a neighboring voltage electrode for both of the other electrodes.

In comparison, Thompson uses an electrode configuration whereby pairs of voltage electrodes are formed, which are used to measure a voltage gradient and which always have the same voltage electrode in common, i.e. a fixed common reference voltage electrode (see figure 2, col. 6 lines 1-5, col. 7 lines 18-20).

Thus, Thompson uses an electrode configuration in which voltage electrodes are connected such that a voltage can be measured across overlapping pairs of voltage electrodes having a voltage electrode in common. The overlapping pairs of voltage electrode are not pairs of neighboring voltage electrodes as described in the present invention and as presently specifically claimed in amended claim 1 since the voltage electrodes of at least one of the overlapping pairs of voltage electrode are separated from each other by a voltage electrode of the other pair of the overlapping pairs of voltage electrode (see figure 2, col. 7 lines 28-37).

Consequently, the subject matter of amended claim 1 patentably defines over the disclosure of Thompson in that a voltage gradient can be measured between pairs of neighboring voltage electrodes, i.e. no fixed common reference voltage electrode is used, such that claim 1 is new over Thompson.

Independent claim 15 refers to a method in which the device of amended claim 1 is used. The location of the different voltage electrodes has been specified as in amended claim 1 and the claim has been limited to measurements across pairs of neighboring voltage electrodes coupled through a common voltage electrode. Applicant respectfully submits that claim 15 is therefore patentable over Thompson on the same basis as claim 1.

For the record, Applicant notes that Ridd '794 discloses a probe device that is put "at a fixed location within the operative range of the surface level of the sediment" (see col. 1 lines 44-45 and lines 59-60). The probe is designed to monitor the sediment level at a fixed position (see col. 2 lines 44-61). Ridd discloses a method and device for measuring sediment levels, which are not suitable for measuring apparent resistivities. In general, Ridd refers to a method for "the location and dept measurement of conductivity boundaries in layered structures" (see col. 1 line 12-14). Hence, Ridd does not disclose a method for measuring apparent resistivities but only for determining the location of a conductivity boundary, which is clearly illustrated in an example concerning the measurement of the height of water on a wave staff mounted vertically across the air-sea surface (see col. 1 line 12-14). Moreover, Ridd does not disclose that voltage gradients can be measured between pairs of neighboring voltage electrodes coupled through a common voltage electrode.

For the record, Applicant further notes that Bischoff '840 discloses an electrode configuration wherein the voltage electrodes are not located between the current electrodes (see fig. 2, fig. 4-6, col. 2 lines 3-8). Bischoff teaches that there should be a fixed ratio between (A) the

distance between each pair of voltage electrodes and (B) the distance between the pair of voltage electrodes and the current electrodes (col. 2 lines 8-12, col. 3 lines 1-5). Furthermore, Bischoff discloses an electrode configuration wherein a voltage gradient is measured across pairs of neighboring voltage electrodes having a voltage electrode in common (see col. 2 lines 12-14, col. 3 lines 5-7). This offers a cheap, simple and quick manner to measure the potential differences, since a minimum amount of measuring electrodes have to be used (see col. 1 lines 62-64, col. 3 lines 7-15).

Hence, Bischoff teaches that, in order to have these advantages, the voltage electrodes should not be located between the current electrodes, otherwise it would not be possible to obtain the desired fixed ratio. Therefore, from the teaching of Bischoff, a person skilled in the art would not consider placing the voltage electrodes between the current electrodes.

Moreover, from the teaching of Thompson in view of Bischoff, the person skilled in the art would not consider using pairs of neighboring voltage electrodes having a voltage electrode in common in order to use a minimum amount of measuring electrodes as taught by Bischoff since the configuration of Thomson already uses a minimum amount of

measuring electrodes by using a common reference electrode and is less complex than that of the configuration of Bischoff. Moreover, using one common reference electrode as disclosed in Thompson is less complex compared to using different common electrodes as disclosed in Bischoff.

Consequently, the subject matter of amended claims 1 and 15 is not obvious to one with ordinary skill in the presence of Thompson '088 and Ridd '794 with or without Bischoff '840.

The prior art documents made of record and not relied upon have been noted along with the implication that such documents are deemed by the PTO to be insufficiently pertinent to warrant their applications against any of applicant's claims.

Favorable reconsideration and allowance are earnestly solicited.

Respectfully submitted,

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